1. Provide a SQL script that initializes the database for the Job Board scenario “CareerHub”.

```
mysql> CREATE DATABASE IF NOT EXISTS CareerHub;
Query OK, 1 row affected (0.01 sec)

mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| careerhub          |
| college            |
| hexprac            |
| information_schema |
| mysql              |
| performance_schema |
| sakila             |
| school             |
| sisdb              |
| sql_hr             |
| sql_inventory      |
| sql_invoicing      |
| sql_store          |
| sys                |
| techshop           |
| ticketbookingsystem |
| world              |
+--------------------+
17 rows in set (0.02 sec)
```

2. Create tables for Companies, Jobs, Applicants and Applications.

```
mysql> CREATE TABLE IF NOT EXISTS Companies (
    -> CompanyID INT PRIMARY KEY AUTO_INCREMENT,
    -> CompanyName VARCHAR(255),
    -> Location VARCHAR(255));
Query OK, 0 rows affected (0.03 sec)

mysql> DESC Companies;
+-------------+--------------+------+-----+---------+----------------+
| Field       | Type         | Null | Key | Default | Extra          |
+-------------+--------------+------+-----+---------+----------------+
| CompanyID   | int          | NO   | PRI | NULL    | auto_increment |
| CompanyName | varchar(255) | YES  |     | NULL    |                |
| Location    | varchar(255) | YES  |     | NULL    |                |
+-------------+--------------+------+-----+---------+----------------+
3 rows in set (0.01 sec)
```

(Companies table)

```
mysql> CREATE TABLE IF NOT EXISTS Jobs (
    -> JobID INT PRIMARY KEY AUTO_INCREMENT,
    -> CompanyID INT,
    -> JobTitle VARCHAR(255),
    -> JobDescription TEXT,
    -> JobLocation VARCHAR(255),
    -> Salary DECIMAL,
    -> JobType VARCHAR(255),
    -> PostedDate DATETIME);
Query OK, 0 rows affected (0.01 sec)

mysql> DESC Jobs;
+---------------+--------------+------+-----+---------+----------------+
| Field         | Type         | Null | Key | Default | Extra          |
+---------------+--------------+------+-----+---------+----------------+
| JobID         | int          | NO   | PRI | NULL    | auto_increment |
| CompanyID     | int          | YES  |     | NULL    |                |
| JobTitle      | varchar(255) | YES  |     | NULL    |                |
| JobDescription | text        | YES  |     | NULL    |                |
| JobLocation   | varchar(255) | YES  |     | NULL    |                |
| Salary        | decimal(10,0) | YES |     | NULL    |                |
| JobType       | varchar(255) | YES  |     | NULL    |                |
| PostedDate    | datetime     | YES  |     | NULL    |                |
+---------------+--------------+------+-----+---------+----------------+
8 rows in set (0.00 sec)
```

(Jobs table)

```
mysql> CREATE TABLE IF NOT EXISTS Applicants (
    -> ApplicantID INT PRIMARY KEY AUTO_INCREMENT,
    -> FirstName VARCHAR(255),
    -> LastName VARCHAR(255),
    -> Email VARCHAR(255),
    -> Phone VARCHAR(255),
    -> Resume VARCHAR(255));
Query OK, 0 rows affected (0.02 sec)

mysql> DESC Applicants;
+-------------+--------------+------+-----+---------+----------------+
| Field       | Type         | Null | Key | Default | Extra          |
+-------------+--------------+------+-----+---------+----------------+
| ApplicantID | int          | NO   | PRI | NULL    | auto_increment |
| FirstName   | varchar(255) | YES  |     | NULL    |                |
| LastName    | varchar(255) | YES  |     | NULL    |                |
| Email       | varchar(255) | YES  |     | NULL    |                |
| Phone       | varchar(255) | YES  |     | NULL    |                |
| Resume      | varchar(255) | YES  |     | NULL    |                |
+-------------+--------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

(Applicants table)

```
mysql> CREATE TABLE IF NOT EXISTS Applications (
    -> ApplicationID INT PRIMARY KEY AUTO_INCREMENT,
    -> JobID INT,
    -> ApplicantID INT,
    -> ApplicationDate DATETIME,
    -> CoverLetter TEXT);
Query OK, 0 rows affected (0.01 sec)

mysql> DESC Applications;
+-----------------+----------+------+-----+---------+----------------+
| Field           | Type     | Null | Key | Default | Extra          |
+-----------------+----------+------+-----+---------+----------------+
| ApplicationID   | int      | NO   | PRI | NULL    | auto_increment |
| JobID           | int      | YES  |     | NULL    |                |
| ApplicantID     | int      | YES  |     | NULL    |                |
| ApplicationDate | datetime | YES  |     | NULL    |                |
| CoverLetter     | text     | YES  |     | NULL    |                |
+-----------------+----------+------+-----+---------+----------------+
5 rows in set (0.00 sec)
```

(Application Table)

3. Define appropriate primary keys, foreign keys, and constraints.

```
mysql> ALTER TABLE Jobs
    -> ADD FOREIGN KEY (CompanyID) REFERENCES Companies(CompanyID);
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Jobs;
+----------------+---------------+------+-----+---------+----------------+
| Field          | Type          | Null | Key | Default | Extra          |
+----------------+---------------+------+-----+---------+----------------+
| JobID          | int           | NO   | PRI | NULL    | auto_increment |
| CompanyID      | int           | YES  | MUL | NULL    |                |
| JobTitle       | varchar(255)  | YES  |     | NULL    |                |
| JobDescription | text          | YES  |     | NULL    |                |
| JobLocation    | varchar(255)  | YES  |     | NULL    |                |
| Salary         | decimal(10,0) | YES  |     | NULL    |                |
| JobType        | varchar(255)  | YES  |     | NULL    |                |
| PostedDate     | datetime      | YES  |     | NULL    |                |
+----------------+---------------+------+-----+---------+----------------+
8 rows in set (0.00 sec)
```

(Jobs table)

```
mysql> ALTER TABLE Applications
    -> ADD FOREIGN KEY (JobID) REFERENCES Jobs(JobID),
    -> ADD FOREIGN KEY (ApplicantID) REFERENCES Applicants(ApplicantID);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Applications;
+-----------------+----------+------+-----+---------+----------------+
| Field           | Type     | Null | Key | Default | Extra          |
+-----------------+----------+------+-----+---------+----------------+
| ApplicationID   | int      | NO   | PRI | NULL    | auto_increment |
| JobID           | int      | YES  | MUL | NULL    |                |
| ApplicantID     | int      | YES  | MUL | NULL    |                |
| ApplicationDate | datetime | YES  |     | NULL    |                |
| CoverLetter     | text     | YES  |     | NULL    |                |
+-----------------+----------+------+-----+---------+----------------+
5 rows in set (0.00 sec)
```

(Applications table)

```
mysql> INSERT INTO Companies (CompanyName, Location)
    -> VALUES('Tech Solutions India', 'Mumbai'),
    -> ('Innovate IT Services', 'Bangalore'),
    -> ('Global Innovations', 'Delhi'),
    -> ('InfoTech Hub', 'Hyderabad'),
    -> ('Coders Paradise', 'Chennai'),
    -> ('DataCrafters', 'Pune'),
    -> ('WebWizards', 'Kolkata'),
    -> ('EduTech Innovations', 'Jaipur'),
    -> ('SmartSolutions Ltd', 'Ahmedabad'),
    -> ('SysGenius Technologies', 'Chandigarh');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Companies;
+-----------+-----------------------+------------+
| CompanyID | CompanyName           | Location   |
+-----------+-----------------------+------------+
|         1 | Tech Solutions India  | Mumbai     |
|         2 | Innovate IT Services  | Bangalore  |
|         3 | Global Innovations    | Delhi      |
|         4 | InfoTech Hub          | Hyderabad  |
|         5 | Coders Paradise       | Chennai    |
|         6 | DataCrafters          | Pune       |
|         7 | WebWizards            | Kolkata    |
|         8 | EduTech Innovations   | Jaipur     |
|         9 | SmartSolutions Ltd    | Ahmedabad  |
|        10 | SysGenius Technologies | Chandigarh |
+-----------+-----------------------+------------+
10 rows in set (0.00 sec)
```

(Companies table)

```
mysql> INSERT INTO Jobs (CompanyID, JobTitle, JobDescription, JobLocation, Salary, JobType, PostedDate)
    -> VALUES (1, 'Software Developer', 'Develop and maintain software applications.', 'Mumbai', 80000, 'Full-time', '2024-01-23 10:30:00'),
    -> (2, 'Data Scientist', 'Analyzing and interpreting complex data sets.', 'Bangalore', 120000, 'Full-time', '2024-01-22 09:45:00'),
    -> (3, 'Network Engineer', 'Designing and implementing computer networks.', 'Delhi', 90000, 'Full-time', '2024-01-21 11:15:00'),
    -> (4, 'UI/UX Designer', 'Creating visually appealing user interfaces.', 'Hyderabad', 95000, 'Full-time', '2024-01-20 12:00:00'),
    -> (5, 'Java Developer', 'Developing and maintaining Java applications.', 'Chennai', 85000, 'Contract', '2024-01-19 14:20:00'),
    -> (6, 'Database Administrator', 'Managing and optimizing databases.', 'Pune', 100000, 'Full-time', '2024-01-18 13:10:00'),
    -> (7, 'Web Developer', 'Building and maintaining websites.', 'Kolkata', 75000, 'Part-time', '2024-01-17 15:40:00'),
    -> (8, 'Education Consultant', 'Providing guidance on educational programs.', 'Jaipur', 80000, 'Contract', '2024-01-16 16:55:00'),
    -> (9, 'IT Support Specialist', 'Providing technical support to end-users.', 'Ahmedabad', 70000, 'Full-time', '2024-01-15 17:25:00'),
    -> (10, 'Systems Analyst', 'Analyzing and improving computer systems.', 'Chandigarh', 110000, 'Full-time', '2024-01-14 18:00:00');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Jobs;
+-------+-----------+----------------------+-----------------------------------------+-------------+--------+-----------+---------------------+
| JobID | CompanyID | JobTitle             | JobDescription                          | JobLocation | Salary | JobType   | PostedDate          |
+-------+-----------+----------------------+-----------------------------------------+-------------+--------+-----------+---------------------+
|     1 |         1 | Software Developer   | Develop and maintain software applications.   | Mumbai      |  80000 | Full-time | 2024-01-23 10:30:00 |
|     2 |         2 | Data Scientist       | Analyzing and interpreting complex data sets. | Bangalore   | 120000 | Full-time | 2024-01-22 09:45:00 |
|     3 |         3 | Network Engineer     | Designing and implementing computer networks. | Delhi       |  90000 | Full-time | 2024-01-21 11:15:00 |
|     4 |         4 | UI/UX Designer       | Creating visually appealing user interfaces.  | Hyderabad   |  95000 | Full-time | 2024-01-20 12:00:00 |
|     5 |         5 | Java Developer       | Developing and maintaining Java applications. | Chennai     |  85000 | Contract  | 2024-01-19 14:20:00 |
|     6 |         6 | Database Administrator | Managing and optimizing databases.          | Pune        | 100000 | Full-time | 2024-01-18 13:10:00 |
|     7 |         7 | Web Developer        | Building and maintaining websites.            | Kolkata     |  75000 | Part-time | 2024-01-17 15:40:00 |
|     8 |         8 | Education Consultant | Providing guidance on educational programs.   | Jaipur      |  80000 | Contract  | 2024-01-16 16:55:00 |
|     9 |         9 | IT Support Specialist | Providing technical support to end-users.    | Ahmedabad   |  70000 | Full-time | 2024-01-15 17:25:00 |
|    10 |        10 | Systems Analyst      | Analyzing and improving computer systems.     | Chandigarh  | 110000 | Full-time | 2024-01-14 18:00:00 |
+-------+-----------+----------------------+-----------------------------------------+-------------+--------+-----------+---------------------+
10 rows in set (0.00 sec)
```

```
mysql> INSERT INTO Applicants (FirstName, LastName, Email, Phone, Resume)
    -> VALUES('Amit', 'Kumar', 'amit@example.com', '9876543210', '"C:\Users\Biswarup\Desktop\CodingChallenge\Amit.txt"'),
    -> ('Priya', 'Sharma', 'priya@example.com', '8765432109', '"C:\Users\Biswarup\Desktop\CodingChallenge\Priya.txt"'),
    -> ('Raj', 'Verma', 'raj@example.com', '7654321098', '"C:\Users\Biswarup\Desktop\CodingChallenge\Raj.txt"'),
    -> ('Anjali', 'Gupta', 'anjali@example.com', '6543210987', '"C:\Users\Biswarup\Desktop\CodingChallenge\Anjali.txt"'),
    -> ('Vikram', 'Singh', 'vikram@example.com', '5432109876', '"C:\Users\Biswarup\Desktop\CodingChallenge\Vikram.txt"'),
    -> ('Neha', 'Shah', 'neha@example.com', '4321098765', '"C:\Users\Biswarup\Desktop\CodingChallenge\Neha.txt"'),
    -> ('Sandeep', 'Mishra', 'sandeep@example.com', '3210987654', '"C:\Users\Biswarup\Desktop\CodingChallenge\Sandeep.txt"'),
    -> ('Swati', 'Rao', 'swati@example.com', '2109876543', '"C:\Users\Biswarup\Desktop\CodingChallenge\Swati.txt"'),
    -> ('Rahul', 'Joshi', 'rahul@example.com', '1098765432', '"C:\Users\Biswarup\Desktop\CodingChallenge\Rahul.txt"'),
    -> ('Pooja', 'Gandhi', 'pooja@example.com', '9876543210', '"C:\Users\Biswarup\Desktop\CodingChallenge\Pooja.txt"');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Applicants;
+-------------+-----------+----------+---------------------+------------+-----------------------------------------------------+
| ApplicantID | FirstName | LastName | Email               | Phone      | Resume
     |
+-------------+-----------+----------+---------------------+------------+-----------------------------------------------------+
|           1 | Amit      | Kumar    | amit@example.com    | 9876543210 | "C:UsersBiswarupDesktopCodingChallengeAmit.txt"     |
|           2 | Priya     | Sharma   | priya@example.com   | 8765432109 | "C:UsersBiswarupDesktopCodingChallengePriya.txt"    |
|           3 | Raj       | Verma    | raj@example.com     | 7654321098 | "C:UsersBiswarupDesktopCodingChallengeRaj.txt"      |
|           4 | Anjali    | Gupta    | anjali@example.com  | 6543210987 | "C:UsersBiswarupDesktopCodingChallengeAnjali.txt"   |
|           5 | Vikram    | Singh    | vikram@example.com  | 5432109876 | "C:UsersBiswarupDesktopCodingChallengeVikram.txt"   |
|           6 | Neha      | Shah     | neha@example.com    | 4321098765 | "C:UsersBiswarupDesktopCodingChallengeNeha.txt"     |
|           7 | Sandeep   | Mishra   | sandeep@example.com | 3210987654 | "C:UsersBiswarupDesktopCodingChallengeSandeep.txt"  |
|           8 | Swati     | Rao      | swati@example.com   | 2109876543 | "C:UsersBiswarupDesktopCodingChallengeSwati.txt"    |
|           9 | Rahul     | Joshi    | rahul@example.com   | 1098765432 | "C:UsersBiswarupDesktopCodingChallengeRahul.txt"    |
|          10 | Pooja     | Gandhi   | pooja@example.com   | 9876543210 | "C:UsersBiswarupDesktopCodingChallengePooja.txt"    |
+-------------+-----------+----------+---------------------+------------+-----------------------------------------------------+
10 rows in set (0.01 sec)
```

```
mysql> INSERT INTO Applications (JobID, ApplicantID, ApplicationDate, CoverLetter)
    -> VALUES (1, 1, '2024-01-23 11:00:00', 'I am excited about the opportunity to contribute as a Software Developer.'),
    -> (2, 2, '2024-01-22 10:00:00', 'My expertise in data science makes me a perfect fit for this role.'),
    -> (3, 3, '2024-01-21 11:30:00', 'I am passionate about designing and managing computer networks.'),
    -> (4, 4, '2024-01-20 12:30:00', 'My creative approach to UI/UX design sets me apart.'),
    -> (5, 5, '2024-01-19 14:30:00', 'I have a strong background in Java development and am ready to take on new challenges.'),
    -> (6, 6, '2024-01-18 13:30:00', 'I excel in optimizing and managing databases.'),
    -> (7, 7, '2024-01-17 15:45:00', 'I have experience in building and maintaining websites with a focus on user experience.'),
    -> (8, 8, '2024-01-16 17:00:00', 'As an education consultant, I am dedicated to helping students achieve their goals.'),
    -> (9, 9, '2024-01-15 17:30:00', 'I am skilled in providing IT support and solving technical issues.'),
    -> (10, 10, '2024-01-14 18:15:00', 'I bring analytical skills and expertise to improve computer systems.');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Applicantions;
ERROR 1146 (42S02): Table 'careerhub.applicantions' doesn't exist
mysql> SELECT * FROM Applications;
+---------------+-------+-------------+---------------------+-----------------------------------------------------------------------------------------------------+
| ApplicationID | JobID | ApplicantID | ApplicationDate     | CoverLetter
                  |
+---------------+-------+-------------+---------------------+-----------------------------------------------------------------------------------------------------+
|             1 |     1 |           1 | 2024-01-23 11:00:00 | I am excited about the opportunity to contribute as a Software Developer.                           |
|             2 |     2 |           2 | 2024-01-22 10:00:00 | My expertise in data science makes me a perfect fit for this role.                                  |
|             3 |     3 |           3 | 2024-01-21 11:30:00 | I am passionate about designing and managing computer networks.                                     |
|             4 |     4 |           4 | 2024-01-20 12:30:00 | My creative approach to UI/UX design sets me apart.                                                 |
|             5 |     5 |           5 | 2024-01-19 14:30:00 | I have a strong background in Java development and am ready to take on new challenges.              |
|             6 |     6 |           6 | 2024-01-18 13:30:00 | I excel in optimizing and managing databases.
                |
|             7 |     7 |           7 | 2024-01-17 15:45:00 | I have experience in building and maintaining websites with a focus on user experience.             |
|             8 |     8 |           8 | 2024-01-16 17:00:00 | As an education consultant, I am dedicated to helping students achieve their goals.                 |
|             9 |     9 |           9 | 2024-01-15 17:30:00 | I am skilled in providing IT support and solving technical issues.                                  |
|            10 |    10 |          10 | 2024-01-14 18:15:00 | I bring analytical skills and expertise to improve computer systems.                                |
+---------------+-------+-------------+---------------------+-----------------------------------------------------------------------------------------------------+
10 rows in set (0.00 sec)
```

5. Write an SQL query to count the number of applications received for each job listing in the "Jobs" table. Display the job title and the corresponding application count. Ensure that it lists all jobs, even if they have no applications.

```
mysql> SELECT j.JobID,j.JobTitle,
    -> COUNT(a.ApplicationID) AS ApplicationCount
    -> FROM Jobs j
    -> LEFT JOIN Applications a ON j.JobID = a.JobID
    -> GROUP BY j.JobID, j.JobTitle;
+-------+------------------------+------------------+
| JobID | JobTitle               | ApplicationCount |
+-------+------------------------+------------------+
|     1 | Software Developer     |                1 |
|     2 | Data Scientist         |                1 |
|     3 | Network Engineer       |                1 |
|     4 | UI/UX Designer         |                1 |
|     5 | Java Developer         |                1 |
|     6 | Database Administrator |                1 |
|     7 | Web Developer          |                1 |
|     8 | Education Consultant   |                1 |
|     9 | IT Support Specialist  |                1 |
|    10 | Systems Analyst        |                1 |
+-------+------------------------+------------------+
10 rows in set (0.00 sec)
```

6. Develop an SQL query that retrieves job listings from the "Jobs" table within a specified salary range. Allow parameters for the minimum and maximum salary values. Display the job title, company name, location, and salary for each matching job.

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE GetJobsInRange(IN minSalary DECIMAL, IN maxSalary DECIMAL)
    -> BEGIN
    -> SELECT j.JobTitle,c.CompanyName,j.JobLocation,j.Salary
    -> FROM Jobs j
    -> JOIN Companies c ON j.CompanyID = c.CompanyID
    -> WHERE j.Salary BETWEEN minSalary AND maxSalary;
    -> END //
Query OK, 0 rows affected (0.00 sec)

mysql> DELIMITER ;
mysql> CALL GetJobsInRange(80000,95000);
+---------------------+---------------------+-------------+--------+
| JobTitle            | CompanyName         | JobLocation | Salary |
+---------------------+---------------------+-------------+--------+
| Software Developer  | Tech Solutions India | Mumbai      |  80000 |
| Network Engineer    | Global Innovations  | Delhi       |  90000 |
| UI/UX Designer      | InfoTech Hub        | Hyderabad   |  95000 |
| Java Developer      | Coders Paradise     | Chennai     |  85000 |
| Education Consultant | EduTech Innovations | Jaipur      |  80000 |
+---------------------+---------------------+-------------+--------+
5 rows in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)
```

7. Write an SQL query that retrieves the job application history for a specific applicant. Allow a parameter for the ApplicantID, and return a result set with the job titles, company names, and application dates for all the jobs the applicant has applied to.

```
mysql> DELIMITER $$
mysql> CREATE PROCEDURE GetJobApplicationHistory(IN applicantID INT)
    -> BEGIN
    -> SELECT JobTitle,CompanyName,ApplicationDate
    -> FROM Applications
    -> JOIN Jobs ON Applications.JobID = Jobs.JobID
    -> JOIN Companies ON Jobs.CompanyID = Companies.CompanyID
    -> WHERE Applications.ApplicantID = applicantID;
    -> END $$
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql> CALL GetJobApplicationHistory(10);
+-----------------+-----------------------+---------------------+
| JobTitle        | CompanyName           | ApplicationDate     |
+-----------------+-----------------------+---------------------+
| Systems Analyst | SysGenius Technologies | 2024-01-14 18:15:00 |
+-----------------+-----------------------+---------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)
```

8. Create an SQL query that calculates and displays the average salary offered by all companies for job listings in the "Jobs" table. Ensure that the query filters out jobs with a salary of zero.

```
mysql> SELECT AVG(Salary) AS AverageSalaryOfAllCompanies
    -> FROM Jobs
    -> WHERE Salary > 0;
+-----------------------------+
| AverageSalaryOfAllCompanies |
+-----------------------------+
|                  90500.0000 |
+-----------------------------+
1 row in set (0.01 sec)
```

9. Write an SQL query to identify the company that has posted the most job listings. Display the company name along with the count of job listings they have posted.

```
mysql> SELECT CompanyName, COUNT(JobID) AS JobCount
    -> FROM Companies
    -> JOIN Jobs ON Companies.CompanyID = Jobs.CompanyID
    -> GROUP BY CompanyName
    -> ORDER BY COUNT(JobID) DESC
    -> LIMIT 1;
+---------------------+----------+
| CompanyName         | JobCount |
+---------------------+----------+
| Tech Solutions India |        1 |
+---------------------+----------+
1 row in set (0.00 sec)
```

9.b Handle ties if multiple companies have the same maximum count.

```
mysql> SELECT
    ->     CompanyName,
    ->     COUNT(JobID) AS JobCount
    -> FROM
    ->     Companies c
    -> JOIN
    ->     Jobs j ON c.CompanyID = j.CompanyID
    -> GROUP BY
    ->     CompanyName
    -> HAVING
    ->     JobCount = (
    ->         SELECT
    ->             COUNT(JobID)
    ->         FROM
    ->             Jobs
    ->         GROUP BY
    ->             CompanyID
    ->         ORDER BY
    ->             COUNT(JobID) DESC
    ->         LIMIT 1
    ->     );
+-------------------------+----------+
| CompanyName             | JobCount |
+-------------------------+----------+
| Tech Solutions India    |        1 |
| Innovate IT Services    |        1 |
| Global Innovations      |        1 |
| InfoTech Hub            |        1 |
| Coders Paradise         |        1 |
| DataCrafters            |        1 |
| WebWizards              |        1 |
| EduTech Innovations     |        1 |
| SmartSolutions Ltd      |        1 |
| SysGenius Technologies  |        1 |
+-------------------------+----------+
10 rows in set (0.00 sec)
```

10. Find the applicants who have applied for positions in companies located in 'CityX' and have at least 3 years of experience.

```
mysql> SELECT DISTINCT a.ApplicantID,a.FirstName,
    -> a.LastName,a.Email,a.Phone,a.Resume
    -> FROM Applicants a
    -> JOIN Applications app ON a.ApplicantID = app.ApplicantID
    -> JOIN Jobs j ON app.JobID = j.JobID
    -> JOIN Companies c ON j.CompanyID = c.CompanyID
    -> WHERE c.Location = 'Chennai'
    -> AND app.CoverLetter >= 3;
+-------------+-----------+----------+------------------+-----------+-----------------------------------------------------+
| ApplicantID | FirstName | LastName | Email            | Phone     | Resume                                              |
+-------------+-----------+----------+------------------+-----------+-----------------------------------------------------+
|           5 | Vikram    | Singh    | vikram@example.com | 5432109876 | C:UsersBiswarupDesktopCodingChallengeVikram.txt.txt |
+-------------+-----------+----------+------------------+-----------+-----------------------------------------------------+
1 row in set (0.00 sec)
```

11. Retrieve a list of distinct job titles with salaries between $60,000 and $80,000.

```
mysql> SELECT DISTINCT JobTitle, Salary
    -> FROM Jobs
    -> WHERE Salary BETWEEN 60000 AND 80000;
+------------------------+--------+
| JobTitle               | Salary |
+------------------------+--------+
| Software Developer     |  80000 |
| Web Developer          |  75000 |
| Education Consultant   |  80000 |
| IT Support Specialist  |  70000 |
+------------------------+--------+
4 rows in set (0.00 sec)
```

12. Find the jobs that have not received any applications.

```
mysql> SELECT *
    -> FROM Jobs
    -> LEFT JOIN Applications ON Jobs.JobID = Applications.JobID
    -> WHERE Applications.ApplicationID IS NULL;
Empty set (0.00 sec)
```

13. Retrieve a list of job applicants along with the companies they have applied to and the positions they have applied for.

```
mysql> SELECT a.FirstName,a.LastName,
    -> c.CompanyName,j.JobTitle
    -> FROM Applicants a
    -> JOIN Applications app ON a.ApplicantID = app.ApplicantID
    -> JOIN Jobs j ON app.JobID = j.JobID
    -> JOIN Companies c ON j.CompanyID = c.CompanyID;
+-----------+----------+-----------------------+-----------------------+
| FirstName | LastName | CompanyName           | JobTitle              |
+-----------+----------+-----------------------+-----------------------+
| Amit      | Kumar    | Tech Solutions India  | Software Developer    |
| Priya     | Sharma   | Innovate IT Services  | Data Scientist        |
| Raj       | Verma    | Global Innovations    | Network Engineer      |
| Anjali    | Gupta    | InfoTech Hub          | UI/UX Designer        |
| Vikram    | Singh    | Coders Paradise       | Java Developer        |
| Neha      | Shah     | DataCrafters          | Database Administrator|
| Sandeep   | Mishra   | WebWizards            | Web Developer         |
| Swati     | Rao      | EduTech Innovations   | Education Consultant  |
| Rahul     | Joshi    | SmartSolutions Ltd    | IT Support Specialist |
| Pooja     | Gandhi   | SysGenius Technologies| Systems Analyst       |
+-----------+----------+-----------------------+-----------------------+
10 rows in set (0.00 sec)
```

14. Retrieve a list of companies along with the count of jobs they have posted, even if they have not received any applications.

```
mysql> SELECT c.CompanyID,c.CompanyName,
    -> COUNT(DISTINCT j.JobID) AS PostedJobsCount
    -> FROM Companies c
    -> LEFT JOIN Jobs j ON c.CompanyID = j.CompanyID
    -> LEFT JOIN Applications app ON j.JobID = app.JobID
    -> GROUP BY c.CompanyID, c.CompanyName;
+-----------+-----------------------+-----------------+
| CompanyID | CompanyName           | PostedJobsCount |
+-----------+-----------------------+-----------------+
|         1 | Tech Solutions India  |               1 |
|         2 | Innovate IT Services  |               1 |
|         3 | Global Innovations    |               1 |
|         4 | InfoTech Hub          |               1 |
|         5 | Coders Paradise       |               1 |
|         6 | DataCrafters          |               1 |
|         7 | WebWizards            |               1 |
|         8 | EduTech Innovations   |               1 |
|         9 | SmartSolutions Ltd    |               1 |
|        10 | SysGenius Technologies|               1 |
+-----------+-----------------------+-----------------+
10 rows in set (0.00 sec)
```

15. List all applicants along with the companies and positions they have applied for, including those who have not applied.

```
mysql> SELECT
    ->     a.ApplicantID,
    ->     a.FirstName,
    ->     a.LastName,
    ->     c.CompanyName,
    ->     j.JobTitle,
    ->     CASE
    ->         WHEN app.ApplicantID IS NOT NULL THEN 'Applied'
    ->         ELSE 'Not Applied'
    ->     END AS ApplicationStatus
    -> FROM
    ->     Applicants a
    -> CROSS JOIN
    ->     Companies c
    -> CROSS JOIN
    ->     Jobs j
    -> LEFT JOIN
    ->     Applications app ON a.ApplicantID = app.ApplicantID AND j.JobID = app.JobID;
+-------------+-----------+----------+----------------------+----------------------+-------------------+
| ApplicantID | FirstName | LastName | CompanyName          | JobTitle             | ApplicationStatus |
+-------------+-----------+----------+----------------------+----------------------+-------------------+
|           1 | Amit      | Kumar    | SysGenius Technologies | Software Developer   | Applied           |
|           2 | Priya     | Sharma   | SysGenius Technologies | Software Developer   | Not Applied       |
|           3 | Raj       | Verma    | SysGenius Technologies | Software Developer   | Not Applied       |
|           4 | Anjali    | Gupta    | SysGenius Technologies | Software Developer   | Not Applied       |
|           5 | Vikram    | Singh    | SysGenius Technologies | Software Developer   | Not Applied       |
|           6 | Neha      | Shah     | SysGenius Technologies | Software Developer   | Not Applied       |
|           7 | Sandeep   | Mishra   | SysGenius Technologies | Software Developer   | Not Applied       |
|           8 | Swati     | Rao      | SysGenius Technologies | Software Developer   | Not Applied       |
|           9 | Rahul     | Joshi    | SysGenius Technologies | Software Developer   | Not Applied       |
|          10 | Pooja     | Gandhi   | SysGenius Technologies | Software Developer   | Not Applied       |
```

16. Find companies that have posted jobs with a salary higher than the average salary of all jobs

```
mysql> SELECT c.CompanyID,c.CompanyName
    -> FROM Companies c
    -> JOIN Jobs j ON c.CompanyID = j.CompanyID
    -> GROUP BY c.CompanyID, c.CompanyName
    -> HAVING MAX(j.Salary) > (SELECT AVG(Salary) FROM Jobs);
+-----------+-----------------------+
| CompanyID | CompanyName           |
+-----------+-----------------------+
|         2 | Innovate IT Services  |
|         4 | InfoTech Hub          |
|         6 | DataCrafters          |
|        10 | SysGenius Technologies |
+-----------+-----------------------+
4 rows in set (0.00 sec)
```

17. Display a list of applicants with their names and a concatenated string of their city and state.

```
mysql> SELECT
    ->     CONCAT(a.FirstName, ' ', a.LastName) AS ApplicantName,
    ->     CONCAT(j.JobLocation, ' at ', c.Location) AS JobAndCompanyLocation
    -> FROM
    ->     Applicants a
    -> JOIN
    ->     Applications app ON a.ApplicantID = app.ApplicantID
    -> JOIN
    ->     Jobs j ON app.JobID = j.JobID
    -> JOIN
    ->     Companies c ON j.CompanyID = c.CompanyID;
+-----------------+--------------------------+
| ApplicantName   | JobAndCompanyLocation    |
+-----------------+--------------------------+
| Amit Kumar      | Mumbai at Mumbai         |
| Priya Sharma    | Bangalore at Bangalore   |
| Raj Verma       | Delhi at Delhi           |
| Anjali Gupta    | Hyderabad at Hyderabad   |
| Vikram Singh    | Chennai at Chennai       |
| Neha Shah       | Pune at Pune             |
| Sandeep Mishra  | Kolkata at Kolkata       |
| Swati Rao       | Jaipur at Jaipur         |
| Rahul Joshi     | Ahmedabad at Ahmedabad   |
| Pooja Gandhi    | Chandigarh at Chandigarh |
+-----------------+--------------------------+
10 rows in set (0.00 sec)
```

18. Retrieve a list of jobs with titles containing either 'Developer' or 'Engineer'.

```
mysql> SELECT *
   -> FROM Jobs
   -> WHERE JobTitle LIKE '%Developer%' OR JobTitle LIKE '%Engineer%';
+-------+-----------+-----------------+-----------------------------------------+-------------+--------+-----------+---------------------+
| JobID | CompanyID | JobTitle        | JobDescription                          | JobLocation | Salary | JobType   | PostedDate          |
+-------+-----------+-----------------+-----------------------------------------+-------------+--------+-----------+---------------------+
|     1 |         1 | Software Developer | Develop and maintain software applications. | Mumbai      |  80000 | Full-time | 2024-01-23 10:30:00 |
|     3 |         3 | Network Engineer | Designing and implementing computer networks. | Delhi       |  90000 | Full-time | 2024-01-21 11:15:00 |
|     5 |         5 | Java Developer  | Developing and maintaining Java applications. | Chennai     |  85000 | Contract  | 2024-01-19 14:20:00 |
|     7 |         7 | Web Developer   | Building and maintaining websites.      | Kolkata     |  75000 | Part-time | 2024-01-17 15:40:00 |
+-------+-----------+-----------------+-----------------------------------------+-------------+--------+-----------+---------------------+
4 rows in set (0.00 sec)
```

19. Retrieve a list of applicants and the jobs they have applied for, including those who have not applied and jobs without applicants.

```
mysql> SELECT a.ApplicantID,a.FirstName,a.LastName,
    -> j.JobID,j.JobTitle,
    -> IF(app.ApplicantID IS NOT NULL, 'Applied', 'Not Applied') AS ApplicationStatus
    -> FROM Applicants a
    -> CROSS JOIN Jobs j
    -> LEFT JOIN Applications app ON a.ApplicantID = app.ApplicantID AND j.JobID = app.JobID;
+-------------+-----------+----------+-------+----------------------+-------------------+
| ApplicantID | FirstName | LastName | JobID | JobTitle             | ApplicationStatus |
+-------------+-----------+----------+-------+----------------------+-------------------+
|          10 | Pooja     | Gandhi   |     1 | Software Developer   | Not Applied       |
|           9 | Rahul     | Joshi    |     1 | Software Developer   | Not Applied       |
|           8 | Swati     | Rao      |     1 | Software Developer   | Not Applied       |
|           7 | Sandeep   | Mishra   |     1 | Software Developer   | Not Applied       |
|           6 | Neha      | Shah     |     1 | Software Developer   | Not Applied       |
|           5 | Vikram    | Singh    |     1 | Software Developer   | Not Applied       |
|           4 | Anjali    | Gupta    |     1 | Software Developer   | Not Applied       |
|           3 | Raj       | Verma    |     1 | Software Developer   | Not Applied       |
|           2 | Priya     | Sharma   |     1 | Software Developer   | Not Applied       |
|           1 | Amit      | Kumar    |     1 | Software Developer   | Applied           |
```

20. List all combinations of applicants and companies where the company is in a specific city and the applicant has more than 2 years of experience. For example: city=Chennai

```
mysql> SELECT a.ApplicantID,a.FirstName,a.LastName,
    -> c.CompanyID,c.CompanyName,c.Location AS CompanyLocation
    -> FROM Applicants a
    -> JOIN Applications app ON a.ApplicantID = app.ApplicantID
    -> JOIN Jobs j ON app.JobID = j.JobID
    -> JOIN Companies c ON j.CompanyID = c.CompanyID
    -> WHERE c.Location = 'Chennai'
    -> AND app.CoverLetter > 2;
+-------------+-----------+----------+-----------+----------------+-----------------+
| ApplicantID | FirstName | LastName | CompanyID | CompanyName    | CompanyLocation |
+-------------+-----------+----------+-----------+----------------+-----------------+
|           5 | Vikram    | Singh    |         5 | Coders Paradise | Chennai         |
+-------------+-----------+----------+-----------+----------------+-----------------+
1 row in set (0.00 sec)
```